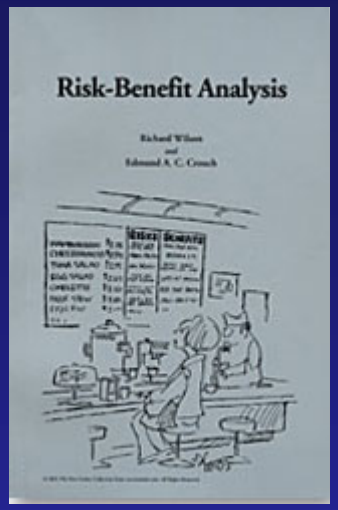

Risk/Benefit Analysis

(with acknowledgement to Wilson and Crouch)

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Risk/Benefit Analysis

- Risk implies uncertainty and the question becomes how do you objectively analyze it
- Risk/Benefit Analysis has been described as a mixture of mathematics and common sense
- Most accept that decision making should not be performed by experts in risk analysis and maybe not by scientists:
  - "Balancing the benefits against the risks belongs not in the domain of science but to society. The judgment is a value judgment- a social rather than a scientific decision." Barry Commoner

Risk/Benefit Analysis

- Managing risk is a continuous process in daily life, e.g. crossing the street
  - In medicine applied to an individual facing options in prevention or therapy of disease
  - In public health applied to decisions about interventions often including a cost component
- Considerations when interpreting results
  - It is of interest that therapeutic interventions rarely have cost as a primary consideration (I would like not to regard it as a major driving force in our discussions today on decisions about polio policy)
  - In making comparisons, analyses can provide information about comparative values of other interventions, e.g. AIDS interventions (I would also suggest not be part of our analysis)

Realities of Risk/Benefit Analysis

- Life is full of risks
- We must make decisions in spite of uncertainties that exist, inaction is a decision
- The “best” decisions for some people will not necessarily be the “best” decisions for others
- Even if we make the “best” decision, we may still experience a bad outcome (uncertainty exists)

Challenges to Risk/Benefit Analysis

- In performing analyses
  - Mathematical modeling can be complicated (particularly modeling complex phenomena over time), and requires assumptions
  - Incomplete and/or missing data, adds more assumptions and uncertainty
  - Framing may differ for various stakeholders (differences in preferences for outcomes may be real and may conflict), which may mean different/multiple analyses required

Role of Risk/Benefit Analysis

- Advocates of using analytical tools to support decisions suggest that they improve decisions and outcomes by:
  - facilitating comparisons between options using common metrics
  - providing a synthesized and comprehensive assessment of the issues
  - detailing what is known and unknown
  - encouraging deliberation based on discussion of science and values
  - being a dynamic model in which variables can be examined.
- Risk and benefit-cost assessments are now an integral part of many public decisions

Attributes of Risk/Benefit Analysis

- Useful to support the effort but not a substitute for it (i.e., helpful for decision makers, but the tools won't make the decision)
- Stimulate discussion and debate, which we hope will occur in this session
- Helps us ask the hard questions and factor in multiple attributes (societal, health outcomes, etc.)
- Limited by ability of the models to capture reality and limits of knowledge/characterization of uncertainty (in this regard, however, should be better than individual or collective Delphic models)

What is the “acceptable” risk?

- Is the only acceptable outcome polio eradication in the broad sense of the word (i.e., approaching zero risk)?
- Often in risk/benefit options include ALARA “as low as reasonably achievable” or BACwCT “best available control with current technology”
- A key question: Do we have adequate operational approaches and technology to achieve the goal?

What is perception of risk versus actual risk?

- What happens to the risk/benefit analysis as you approach the disease asymptote and begin to calculate risk, cost, and effort per case prevented?
- This obviously plays a major role in decision about approaches to prevention, e.g. the switch from OPV to IPV
- Is there a fading social and immunological memory of polio?

Questions for this session

- What is the role of risk/benefit analysis in the conduct of an effort as complex as polio eradication?
- What are key areas in which we need to improve the data sets upon which decisions are made?
  - With regard to achieving cessation of wild type virus circulation?
  - With regard to sustaining the absence of circulating polio virus once eradication is achieved?
  - With regard to understanding the biology and neurotrophic potential of enteroviruses other than polio?